

Amendments to the Drawings

The attached three sheets of drawings include changes to FIGS. 1A, 1B, 2A, and 4-6. These sheets, which include FIGS. 1A, 1B, 2A, 2B, and 3-6, replace the original sheets. The figures have been amended to address the issues presented in the Office action. No new matter has been added by these amendments.

Remarks

Prior Art Clarification

In preparing this response, the Applicant noted an unintentional inconsistency in the original application as filed. Specifically, the description of FIG. 4 is actually a description of FIG. 3, and vice versa. Therefore, the connecting rod bearing cap joint shown in FIG. 3 is a typical prior art connecting rod bearing cap joint, whereas the connecting rod bearing cap joint shown in FIG. 4 is in accordance with the invention. The Applicant has corrected the descriptions of FIGS. 3 and 4, and has not labeled FIG. 4 as prior art because it clearly illustrates the present invention.

The Applicant's position is supported by figures and text of the present application. The erroneous description of FIG. 3 indicates that the connecting rod bearing cap joint shown in FIG. 3 has an "angled bolt seat according to the invention." Obviously FIG. 3, correctly labeled as "Prior Art," does not include angled bolt seats; however, FIG. 4 clearly does. Furthermore, paragraph [0027] of the present application states that "typical connecting rod bearing cap joints are made as illustrated in FIG. 3, with each bolt joint seat 36 oriented 90° to the corresponding bolt hole 37 and threaded hole 39 centerline 38." Also, paragraph [0029] describes the bolt seat 36a skewness of FIG. 4 as being one of the ways to accomplish the invention, in comparison to the typical joint shown in FIG. 3. In addition, the structure of FIG. 4 is specifically claimed in claim 3 as an embodiment of the invention. As a result, it is clear from the application as a whole that the description of FIG. 3 and FIG. 4 were inadvertently swapped and that FIG. 4 is not prior art. This obvious error likely arose because the provisional application references FIG. 3 of the present invention as Fig. 4, and FIG. 4 of the present invention as Fig. 3.

The Applicant respectfully requests that the Examiner review the amended application that has remedied the error created by the inconsistent description of the figures. The ancillary effects of the inconsistent figure description are noted below, where appropriate.

Restriction Requirement

In light of the corrected figure descriptions, in which FIG. 4 is clearly illustrating the invention, the Applicant respectfully requests that the original restriction requirement be reviewed.

The September 5, 2007 Office action stated that the application includes the following two species:

- I. FIG. 5 (including claims 1, 2, 4, and 8); and
- II. FIG. 6 (including claims 1, 2, 5-7, and 8).

The Applicant's October 3, 2007 response noted that the invention includes the following three species, with claims 1, 2, and 8 being generic to species I, II, and III:

- I. FIG. 5 (including claims 1, 2, 4, and 8);
- II. FIG. 6 (including claims 1, 2, 5-7, and 8); and
- III. FIG. 4 (including claims 1, 2, 3, and 8).

In light of the clarifying amendments to the description of FIGS. 3 and 4, the Applicant submits that the above three species designations are correct. The Applicant again traverses the original restriction requirement and elects species III, directed toward FIG. 4 and claims 1, 2, 3, and 8.

Should the Examiner maintain the original restriction requirement, the Applicant elects species I, directed to FIG. 5 and claims 1, 2, 4 and 8, without prejudice to the filing of a petition under 37 C.F.R. § 1.144 to the Director to address the restriction requirement.

The Applicant wishes to highlight that the original election was made with traverse in the first sentence of the reply filed on October 3, 2007. The current Office action erroneously states that the election was made without traverse. Additionally, the Applicant maintains that claims 1, 2, and 8 are generic to all of the species.

In response to the assessment of the prior art made, the Applicant respectfully disagrees for at least the following reasons. The pre-stress shown in FIG. 2B by vector arrows 22, 24, and 26 indicate an initial bending stress in the fastener that is present as a result of its being assembled to the joint. The pre-stress shown in the prior art FIG. 2A by vector arrows 18 do not indicate any bending

stress. Therefore, the pre-stress of the present invention shown in FIG. 2B is clearly distinct from the axial pre-stress shown in FIG. 2A of the prior art. Furthermore, the stress shown in the prior art FIG. 1B does not illustrate initial bending stress as shown in FIG. 2B of the present invention. FIG. 1B merely indicates the stress distribution in a fastener subjected to only axial loading as compared to FIG. 1A, which shows bending and axial loading, and FIG. 2A, which illustrates the components of bending and axial loading.

With respect to the statement that "Figure 3 also teaches this concept since the figure contains an angled bolt seat," the Applicant respectfully disagrees. The figure does not show an angled bolt seat 36a as see in FIG. 4. Even if the Office action is implying that the fastener be inserted opposite as shown in FIG. 4 proximate the connecting rod, despite any teaching or suggestion, the induced pre-stress would increase the maximum stress in the fastener by effectively adding the stress caused by the application loading to the pre-stress in the fastener.

Lastly, with respect to FIG. 4, as indicated above, FIG. 4 illustrates a connecting rod bearing cap joint with an angled bolt seat according to the invention, so as to produce a force profile like that in FIG. 2B, and is therefor not prior art.

Drawings

Various amendments have been made to the drawings to address the Examiner's concerns. However, as discussed above, FIG. 4 was not labeled as "prior art" because it illustrates an embodiment of the present invention. The objection to FIG. 4 is therefor overcome.

The drawings have been amended to remedy the reference character objections made in the Office action. As a result, the objection thereto should be withdrawn.

Additionally, the drawings have been amended to correct a series of objections relating to 37 C.F.R. § 1.84(p)(4), including the following:

Reference characters "12," "14," and "16" were objected to as being used to designate axial loads with more than one magnitude in FIG. 1A, and although not stated, presumably FIG.

1B. To remedy this objection, the Applicant amended the drawings to add reference characters "14a," "14b," "16a," and "16b." The Applicant notes that the magnitude of "12" is the same in FIGS. 1A and 1B, and therefore is represented by a single reference character. Additionally, the Applicant preemptively amended FIG. 2A by adding reference characters "20a," "20b," and "20c" where shown.

Reference character "36" was objected to as being used to designate straight seats in FIGS. 3, 5, and 6, and skewed seats in FIG. 4. To remedy this objection, the Applicant amended the drawings to add reference character "36a" to FIG. 4 representing skewed seats.

Reference character "40" or "48," presumably "40", was objected to as being used to designate a bore without a gap in FIGS. 3, 4, and 6, and a bore with a gap in FIG. 5. To remedy this objection, the Applicant amended the drawings to add reference character "40a" to FIG. 5 representing a bore with a gap.

Reference character "10" was objected to as being used to designate straight bolts in FIGS. 1A-2B, 4, and 6, and a bent bolt in FIG. 6. To remedy this objection, the Applicant amended the drawings to add reference character "10a" to FIG. 6 representing a bent bolt.

Reference character "44" was objected to as being used to designate a connecting rod body with a circular bore in FIGS. 3 and 4, with a gap in FIG. 5, and with a threaded hole with an angle in FIG. 6. To remedy this objection, the Applicant amended the drawings to add reference characters "44a" and "44b" to FIGS. 5 and FIG. 6, respectively.

Reference character "42" was objected to as being used to designate various bearing caps as shown in FIGS. 3-6. To remedy this objection, the Applicant amended the drawings to add reference characters "42a," "42b," and "42c" to FIGS. 4-6, respectively.

Reference character "39" was objected to as being used to designate an "angled" threaded hole as in FIGS. 2-5, presumably intending FIGS. 3-5 as FIGS. 2A-2B do not include any holes, and an "excessively angled" threaded hole as in FIG. 6. The Applicant notes, however, that the only angled hole is shown in FIG. 6. To remedy this objection, the Applicant amended the drawings to add reference character "39a" to FIG. 6 representing an angled threaded hole.

Reference character "11" was objected to as being used to designate a straight shank in FIGS. 1A-2B, 4, and 5, and a bent shank in FIG. 6. To remedy this objection, the Applicant amended the drawings to add reference character "11a" to FIG. 6 representing a bent shank.

The drawings were objected for failing to illustrate the "plane of bending" as claimed. The Applicant has added reference "P" to FIGS. 4-6, where shown, to clarify the location of the preferred "plane of bending" in the example embodiments.

Corrected drawings sheets labeled as "Replacement Sheets" are attached to this response. No new matter has been added by the above amendments. As a result, the Applicant has corrected the drawings and has overcome the objections placing the drawings in condition for allowance.

Specification

The specification was updated to clarify the inconsistent use of FIG. 3 and FIG. 4. Specifically, the Brief Description of the Drawings was updated as well as a reference to FIG. 3 in paragraph [0028].

A variety of reference characters were added in connection with the 37 C.F.R. § 1.84(p)(4) objections discussed in relation to the Figures. Additionally, reference character "P" designating the "plane of bending" was added to clarify the invention as claimed.

Lastly, the description of reference character "44" was objected to as being inconsistent between paragraphs [0028] and [0031]. The Applicant has made various amendments to paragraphs [0028]-[0031] to clarify the description therein. With additional specificity, the Applicant may be better able to address the objection noted in the Office action.

No new matter has been added by the above amendments. As a result, the Applicant has corrected the specification and has overcome the objections placing the specification in condition for allowance.

Claims

Objections

Claim 1 was objected to due to the format of the Jepson-style claim. The Applicant has amended claim 1 as suggested by the Examiner in this respect. As a result, claim 1 is in condition for allowance.

Claim 4 was objected to as being indefinite for using the term "them." The Applicant has amended claim 4 making it definite and therefor in condition for allowance.

Rejections Under 35 U.S.C. § 112

Claims 1, 2, 4, and 8 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicant regards as the invention. The Applicant notes that a "functional limitation must be evaluated and considered, just like any other limitation

of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used.” MPEP 2173.05(g).

With respect to claims 1 and 2, the Office action cited a lack of structure to carry out the function described. The Applicant has amended claims 1 and 2 to more clearly recite the structure of the present invention.

With respect to claim 4, the Office action noted uncertainty surrounding the gap. The Applicant has amended claim 4 to clarify the claim as required by the Office action.

With respect to claim 8, the Office action noted additional unclear language. The Applicant has amended claim 8 to clarify the language of the claim.

In light of the above, claims 1, 2, 4, and 8 are in condition for allowance, and the Applicant respectfully requests that a timely notice of allowance be granted.

Rejections Under 35 U.S.C. § 102

Claims 1, 2, and 8 were rejected under 35 U.S.C. § 102(b) as being anticipated by the erroneous Applicant’s admitted prior art. As discussed at length above, FIG. 4 is not prior art, but is in fact a joint according to the invention. The Office action turns to FIGS. 1B and 3 as anticipating the elements of claim 1. The Examiner is correct that FIG. 3 represents the prior art. However, the Applicant believes that the Office action may be referring to FIG. 4, as opposed to FIG. 3, when noting that the “axis of the screw hole 39 is at an angle with respect tot [sic] the joint seat 36,” because the joint seat 36 shown in FIG. 3 is not at an angle.

In any event, FIG. 4 is not properly considered prior art and FIG. 3 does not anticipate claim 1 as it merely illustrates the prior art. Claim 1 is therefore in condition for allowance. Claims 2 and 8 are allowable due at least in part to the chain of dependency.

Claims 1, 2, 4, and 8 were rejected under 35 U.S.C. § 102(b) as being anticipated by Thomson et al. (U.S. Pat. No. 6,309,135). The object of Thomson et al. is to “provide a clamp which securely engages an object without damaging the object.” Thomson et al., col. 2, lns. 35-36.

With respect to claim 1, the Office action states that Thomson et al. discloses the elements of claim 1. However, the canting feature of Thomson et al. shown in

FIGS. 11, 14A, and 14B is to "allow the fasteners to be tightened with less likelihood of binding as outer portions of the clamp members engage the object and tend to rotate." Thomson et al., col. 3, lns. 9-10. The geometry and structure of Thomson et al. is to prevent any binding of the fastener by allowing the clamp members 41a, 41b to rotate, therefore aligning the fastener receiving passageways 42b, 42c. As a direct result, the structure, geometry, and object of Thomson et al. all go to eliminating and preventing any incidental bending stress in the fastener that may result during assembly. Therefore, Thomson et al. does not anticipate claim 1 that calls for a joint including surfaces that induce a bending stress in the fastener shank in a plane of bending when the fastener is assembled.

With respect to claims 2 and 4, each is allowable at least in part due to the chain of dependency because each depends from allowable independent claim 1.

With respect to claim 8, the object clamp shown in Thomson et al. is clearly not a connecting rod joint having a bearing cap and a rod as called for in claim 8. The steering tube clamp 40 is inserted into a passageway 35 whereat the clamp members 41a, 41b of the steering tube clamp 40 are drawn together via fasteners to clamp against a steering tube. Furthermore, claim 8 is dependent on allowable independent claim 1 and is therefore allowable at least in part due to the chain of dependency.

Summary

In light of the above comments and amendments, the Applicant has placed the entire application in condition for allowance. The Applicant respectfully requests that a timely notice of allowance be granted for the pending claims 1-8. No fees are believed due; however, if any fees are due the Commissioner is hereby authorized to charge them to Deposit Account No. 17-0055.

Respectfully submitted,
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